

# Open Government Plan Version 2.0



# NASA Open Government Plan Version 2.0

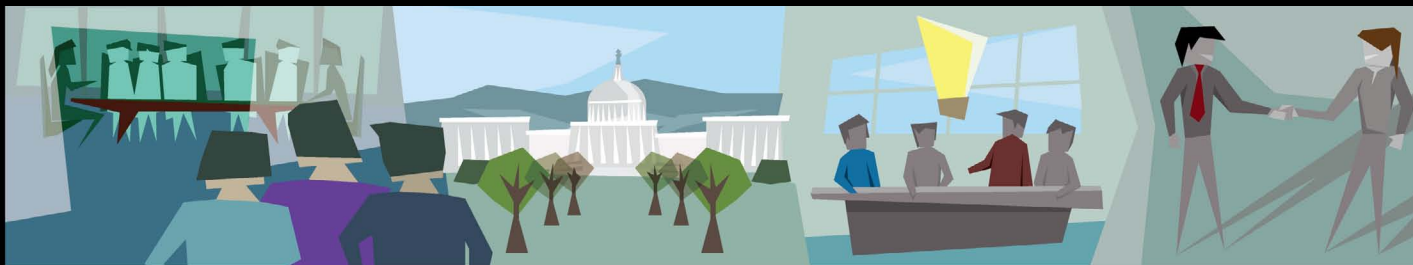
April 2012

<http://open.nasa.gov/plan>

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## **VISUAL SUMMARY**



**Framework** - In our history, we have achieved seemingly impossible goals, from reaching the Moon to advancing fundamental knowledge about our place in the universe. In the past we often created the technologies to achieve these goals on internal project teams. NASA must now innovate on how we innovate, focusing on technologies that advance humanity into space while more directly involving citizens and public-private partnerships. The Open Government Directive also calls on us to change the way we do business, and as a result turn us into a twenty-first-century space program for a twenty-first-century democracy.



**Flagship** - NASA's web environment is well known for providing an unparalleled wealth of information to the public and is critical in fulfilling the agency's statutory requirement to disseminate information about its programs "to the widest extent practicable." Our new Flagship Initiative focuses our resources on creating an accessible, participatory and transparent web environment based on open and interoperable standards - representing what Open Government at its best can and should be.



**Majors** - The major Initiatives - Open Source, Open Data, and Technology Accelerators - exemplify our best efforts to embrace transparency, participation and collaboration in NASA's policy, technology, and culture. NASA's broad commitment to technology acceleration includes public-private partnerships, co-located spaces, citizen engagement and innovation mentoring - in addition to making enormous amounts of open data available for public use. Open Data and Open Source efforts allow us to engage the public in collaborative application development, use of scientific data, and knowledge sharing as we work together to pioneer the future.



**Highlights** - By recognizing current initiatives that exemplify the values of Open Government, this Plan is intended as a model - not a manual - for change throughout the Agency. Applauding these successes across centers and organizations creates a social incentive for our workforce to innovate, encouraging them to continue looking for ways to be more efficient, to further enhance our relationships existing stakeholders, and to create new partnerships.



**Directory** - As openness becomes even more pervasive throughout the Agency's culture, both at the organizational and individual level, we are taking the unique opportunity to collect all the activities and success stories related to Open Government at NASA. The Plan's new directory of participatory, collaborative and transparent activities represents how Open Government continues to evolve at NASA - and gives citizens the opportunity to respond and engage.

# **EXECUTIVE SUMMARY**

NASA is committed to the Open Government Initiative. Building on our founding legislation in 1958 which directed NASA to "...provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof," we continue to take a focused approach to expanding the level of openness within the Agency. This same legislation directed NASA to "...arrange for participation of the scientific community..." as part of our mission; we recognize this as a constantly evolving task to collaborate in ways not yet imagined at the Agency's inception. Our Plan reflects the success stories and lessons learned from living out the principles of Open Government embedded in NASA's operations and culture for more than half a century.

Included in the Plan is a Flagship Initiative, three additional major initiatives, ten highlighted activities and a directory of more than 100 additional Agency activities that exemplify the Open Government Directive at NASA. The initiatives and activities in this Plan highlight specific efforts at NASA that meet and, in many cases, exceed the requirements of the Open Government Directive. Our Flagship Initiative for nasa.gov defines the intersection of NASA's policy, technology, and culture, acting as a catalyst for openness inside and outside of the Agency.

NASA has identified activities and success stories that embody values of transparency, participation, and collaboration and seeks to build upon them. Open Government principles are already evident in numerous activities underway throughout the Agency; therefore, this revision of the Plan captures these activities in one place for the benefit of all.

The revised Plan will be entirely online, creating a platform where activity owners may update their activities according to their own timeline, where site visitors can comment and interact, and where other applicable articles and sites can be interconnected and cross-linked. The online platform will also permit Portable Data Format (PDF) snapshots of the current content at any time.

The revised Plan will continue to be guided by a strong multi-dimensional framework, addressing technology, policy, and culture, in order to meet the Agency's mission, vision, values, and goals. It reflects the Agency's ongoing commitment to its original five guiding principles from version 1.0 of the NASA Open Government Plan:

1. Increase Agency transparency and accountability to external stakeholders
2. Enable citizen participation in the NASA mission
3. Improve internal NASA collaboration and innovation
4. Encourage partnerships capable of creating economic opportunity
5. Institutionalize Open Government philosophies and practices at NASA

The Plan is based on a perspective of continuous learning; integration of policy, technology, and culture; and the rapidly changing external environment. We believe that integrating Open Government Principles into existing systems (e.g., governance councils and performance management system) provides the best framework for success.

The Open Government Directive calls on NASA to do what it does best-innovate. In our history, we have achieved seemingly impossible goals, from reaching the Moon to advancing fundamental knowledge about our place in the universe. In the past we would create the technologies to achieve these goals through internal teams and collaborations. NASA must now innovate on how we innovate, focusing on technologies that advance humanity into space while more directly involving citizens and public-private partnerships. The Open Government Directive also calls on us to become a twenty-first-century space program for a twenty-first-century democracy.





# HELLO

AN INTRODUCTION TO VERSION 2.0  
OF THE NASA OPEN GOVERNMENT PLAN

# To reach for new heights and reveal the unknown so that what we do and learn will benefit all humankind.

## NASA's Vision Statement

It has been over two years since NASA released the first version of its Open Government Plan. The first Plan represented a bold step toward becoming an even more transparent, participatory and collaborative agency and included 147 goals across 22 organizations at NASA. Admittedly, the goals we set out to achieve were difficult - we are proud that we accomplished an enormous amount of what we set out to do!

As we move forward, the revised Plan is an opportunity to build on what we have learned during the implementation of the first two years of the Initiative. The framework of NASA's new Plan remains the same, but the many activities associated with the Plan will change. As we close out our first three Flagship Initiatives, we will introduce a new Flagship Initiative that focuses our resources on creating an accessible, participatory and transparent web environment based on open and interoperable standards. This effort will provide a new Agency-wide capability to create, maintain, and manage the nasa.gov web environment and associated services which represent what Open Government at its best can and should be. In addition to the Flagship, we will expand our Open Data and Open Source efforts, and add a new category of activities called "Technology Accelerators." These key efforts collectively represent NASA's commitment to engaging citizens in the space exploration and aeronautics mission.

As openness becomes even more pervasive throughout the Agency's culture, both at the organizational and individual levels, we recognize the unique challenge we have in collecting the widespread activities and success stories related to Open Government at NASA. Accordingly, we have updated our Plan with this in mind and have created a new directory of participatory, collaborative and transparent activities that represents how Open Government continues to evolve at NASA.

Overall, the NASA Open Government Plan provides a strong multi-dimensional framework of technology, policy, and culture, creating new and leveraging existing platforms for transparency, participation, and collaboration - all to better support the Agency's mission to pioneer the future. The updated Plan represents our latest efforts in working together - with YOU - to enable us all to reach for new heights and reveal the unknown.



# WELCOME

A FEW WORDS OF SUPPORT FROM  
LINDA CURETON, NASA CHIEF INFORMATION OFFICER



April 9, 2012

Dear Friends and Family of NASA,

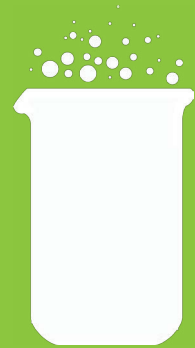
It has been two years since we released the first version of NASA's Open Government Plan. Since that time, we have been hard at work implementing the original Plan with the ultimate goal of embedding Open Government principles deeper into all levels of our organization. Today, as a direct result of the Open Government Initiative, NASA is an even more transparent, participatory and collaborative agency.

NASA continues to embrace the Open Government challenge. With the release of the second version of our Plan, we are building on the successes and lessons learned and thinking about the next generation of Open Government. The framework of NASA's Plan will remain the same, but the many activities associated with our Plan will change. We will also continue to evolve and experiment with new ways of partnering with the public.

As we noted in the first version of the Plan, the adoption of new technology, protocols, procedures, and policy takes time. However, we continue to believe that the Open Government Initiative is an opportunity to strengthen NASA, and in turn, strengthen democracy. With this in mind, the second version of our Plan aims to particularly focus on opportunities for participation.

This is important work that cannot be accomplished without you. We hope you will join us!

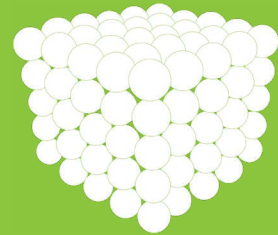
Linda Cureton  
NASA Chief Information Officer



# OUR PROGRESS

TOWARDS ACCOMPLISHING THE GOALS OUTLINED IN  
VERSION 1.0 OF THE NASA OPEN GOVERNMENT PLAN





# FRAMEWORK

FOR VERSION 2.0  
OF THE NASA OPEN GOVERNMENT PLAN

## Openness Overview: Part of NASA's DNA

NASA's founding legislation, the National Aeronautics and Space Act of 1958, addresses the role NASA should play in ensuring the general welfare of the United States, with language directly applicable to the principles of Open Government:

*Sec. 203. (a) The Administration, in order to carry out the purpose of this Act, shall—*

*(1) plan, direct, and conduct aeronautical and space activities;*

*(2) arrange for participation by the scientific community in planning scientific measurements and observations to be made through use of aeronautical and space vehicles, and conduct or arrange for the conduct of such measurements and observations;*

*(3) provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof;*

*(4) seek and encourage, to the maximum extent possible, the fullest commercial use of space; and*

*(5) encourage and provide for Federal Government use of commercially provided space services and hardware, consistent with the requirements of the Federal Government.*



As the Space Act articulates, there is a strong linkage between transparency, dissemination of information, and the commercial uses of space (or economic development). For more than a half-century, we have created policies and processes to carry out our legislated mission.

Examples include:

- The availability of raw science data archived by all NASA missions, for open use.
- Inclusion of the international scientific community in road mapping and strategic planning, mainly through the National Academies of Science and other working groups.
- Use of full and open competition, including NASA centers, academia, and industry, to implement activities that help fulfill mission requirements.

Examples are given in more detail in the sections about specific initiatives.

Openness is fostered from the organizational level to the level of individual employees. Our employees have incentives and sometimes even requirements to be open and collaborative, and leadership development training promotes a culture of openness and collaboration at every level. Each leadership level requires competencies in communication and advocacy, knowledge management, and customer, stakeholder, and partner relationships. For NASA's science community, publishing research is often required for career advancement within the Agency.



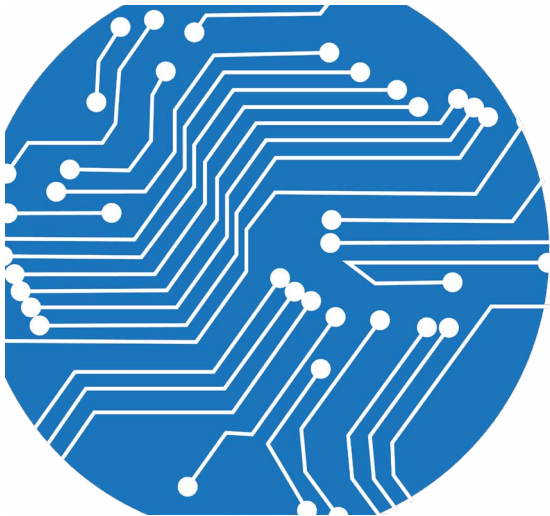
Finally, we continue to employ many approaches to operations that already embody transparency, participation, and collaboration, such as:

- Strategic planning with external stakeholders.
- Employing collaboration tools to improve communication with our scientific and technological communities.
- Seeking partnerships for mission success.

## Framework for Open Government

NASA is a community of scientists, engineers, and other professionals who explore the Earth and space for the benefit of humankind. As we uncover increasing knowledge about the universe and solve difficult engineering challenges, we are continuously experimenting in labs, workshops, and offices. We gather and analyze information about our universe, requiring perseverance and creativity to solve unique challenges. Unlocking the complex systems of the cosmos does not come with an operating manual. Instead, we create hypotheses, conduct experiments, and refine our mental models and conceptual frameworks based on evidence and experience.

Open Government presents similar challenges as we work to improve our performance and responsiveness to the Open Government Directive. Accordingly, the NASA Open Government Plan is not a manual. By recognizing current initiatives that exemplify the values of Open Government, this Plan is intended as a model for change throughout the Agency. Applauding these successes creates a social incentive for our workforce to innovate, encouraging them to continue looking for ways to be more



efficient, to further enhance our relationships with existing stakeholders, and to create new partnerships. The guidance contained in the Open Government Directive creates cultural and procedural opportunities for new initiatives, including those described here. We believe that this is a continuous learning process, and thus have chosen to couch our Open Government efforts as a framework in which to experiment and learn over time.

The Open Government framework strives to be multi-dimensional in its approach, addressing technology, policy, and culture. When all three of these tenets are targeted for improvement, greater possibilities present themselves and momentum builds.

The Open Government Initiative is a movement within government to adapt to the changing external environment, embrace new technologies, engage with our citizens, and encourage collaborations and partnerships. This is the result of the government recognizing that we can be more relevant for our stakeholders and intentionally create a culture of openness as we evolve into a twenty-first century democracy. At NASA, we are in the midst of a massive change ourselves. The external environment of the aeronautics and space sector is undergoing a shift in how business is conducted, and the core of NASA's strategy for extending humanity into the solar system recognizes the ingenuity of citizens as a rich resource to develop more capable and innovative technologies and to create a thriving commercial space sector.

The Open Government Initiative provides a perspective to ensure that we are open in our processes, we generate data products of utility for the space sector, and we enter into partnerships across the US government, with industry, other nations, and the public.

## Cross-cutting Objectives

NASA has developed the following five principles to guide its efforts to integrate Open Government into the Agency:

1. Increase Agency transparency and accountability to external stakeholders.
2. Enable citizen participation in NASA's mission.
3. Improve internal NASA collaboration and innovation.
4. Encourage partnerships that can create economic opportunity.
5. Institutionalize Open Government philosophies and practices at NASA.

These are directly aligned with the Plan components articulated in the Open Government Directive. As stated earlier, there is no prescribed way to be an Open Government agency. We believe it is the responsibility of each office, program, and employee to make this vision become a reality.

## Conclusion

Open Government principles are already evident in many activities underway throughout NASA. Through the Open Government Initiative, we continue the dialogue across the Agency on how to infuse Open Government principles into even more of our daily operations. These conversations allow us to see new opportunities to strive for greater transparency, participation, and collaboration as our strategic directions focus on the opportunities for the twenty-first century and beyond.

Our approach has been to find the activities and anecdotal successes that embody values of openness, participation, and collaboration so that we can celebrate and build upon them. In this update of our Plan, we aim to collect the result of these conversations in the directory of participatory, collaborative and transparent activities.

The underlying motivation behind the Open Government Initiative marks a shift in the way we interact with the public and conduct information resource management. As such, we will face inevitable challenges as we transition from the current state of operations to the Agency-wide adoption of policies and tools designed to increase transparency and enhance collaboration both internally and externally. We recognize the need to understand and plan for such challenges in order to sustain Open Government practices throughout NASA.

No one is an expert in Open Government. We are taking an experimental and scientific approach to Open Government, and we recognize the long-term nature of this movement. Finally, we believe that the Flagship Initiative we have chosen is a key catalyst for change. All these efforts will transform NASA into an even more transparent, participatory, and collaborative Agency and ease our transition into a twenty-first-century space program.



# FLAGSHIP INITIATIVE

# **NASA WEB ENVIRONMENT**

NASA's web environment is well known for providing an unparalleled wealth of information to the public and is critical in fulfilling the agency's statutory requirement to disseminate information about its programs "*to the widest extent practicable*." To external audiences, NASA's Web capabilities provide direct access to agency programs and information, allowing them to participate in the excitement of research and exploration. Internally, NASA personnel use web sites and services to support NASA's core business, scientific, research, and computational activities.

The first NASA web sites appeared in the early 1990s, and the Agency's primary site, NASA.gov, has evolved since then through four major iterations. The most recent version of the public website represented a big step for the Agency in becoming more collaborative, participatory and transparent through the adoption of a variety of social features. Today, the main portal, nasa.gov, is the main touch point for millions of people around the world regarding the agency's space exploration and aeronautics mission and attracts 600,000 unique visitors per day. The NASA portal alone generates

more than 140,000,000 visits a year. NASA.gov also currently serves as a hub for NASA's social media presence which includes over 250+ accounts across social media sites such as Twitter, Facebook, Flickr, Foursquare, Google+, YouTube, UStream, and Slideshare.



NASA.gov is only one part of NASA's entire website infrastructure. The current infrastructure provides development and hosting of approximately 140 internal and external web applications and websites, which are developed using various technology stacks. Our external audience includes not only the interested public, media, students, and educators, but also researchers, industry partners and government partners. As NASA continues to adapt to today's complex, interlinked and fast-changing environment, NASA recognizes that

effectively and efficiently creating, researching, managing, preserving, protecting, and disseminating the information required to achieve the objectives of research and space exploration, as well as other NASA missions, is vital to its continued mission success.

As the Flagship Initiative for the second version of NASA's Open Government Plan, the Agency will take a fresh look at its web architecture and processes to manage content in order build an accessible, participatory and transparent web environment based on open and interoperable standards. This effort will provide a new Agency-wide capability to create, maintain, and manage the nasa.gov websites and associated services. The Agency will aim to leverage open source software, as well as cloud computing technologies, and take an integrated approach to search, video, and social media. The goal of this effort will be to provide a consistent, capable and agile, cloud-based enterprise infrastructure that provides a Platform as a Service (PaaS) and Software as a Service (SaaS) supported Infrastructure as a Service (IaaS) for internal and external web applications and sites using an interoperable, standards-based and secure environment.

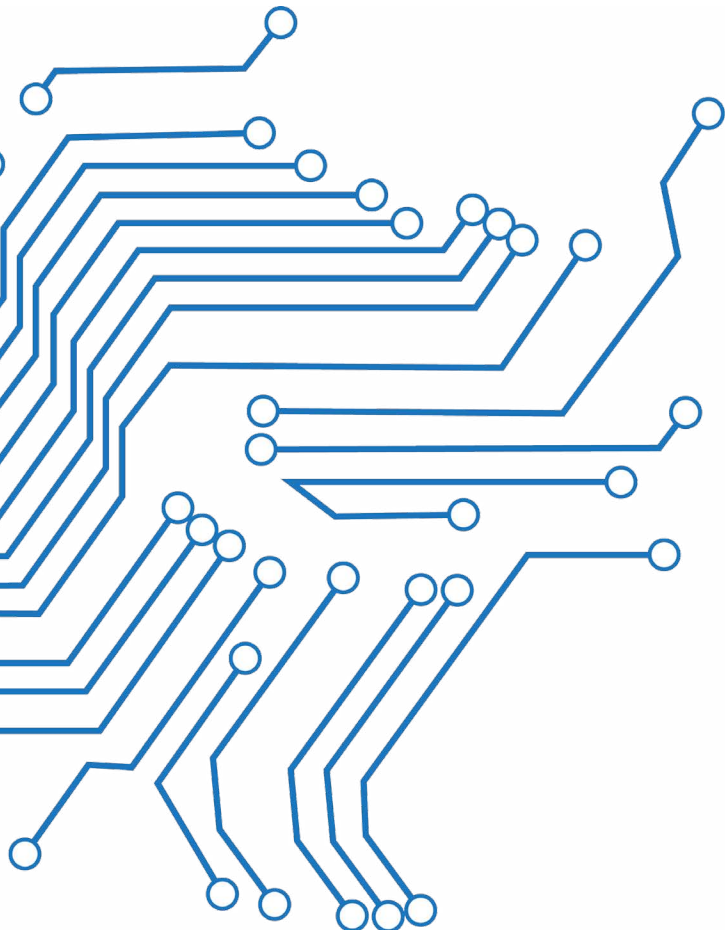
Our hope is that NASA.gov will continue to represent the latest in online innovation and serve as an example of how NASA is rethinking the way its services are delivered online. The new architecture aims to keep NASA relevant across all audiences by creating a flexible platform that can respond to rapidly changing technologies and citizens' expectations.

Specifically, the new architecture will:

1. Strive for vendor independence through the use of Commercial Off-The-Shelf (COTS) Technology with a preference for Open Source, Government Off-The-Shelf (GOTS), and then proprietary solutions over custom-built solutions. This includes cloud offerings.
2. Utilize open standards based solutions over closed proprietary solutions.
3. Strive to deliver business value through the use of incremental, iterative development processes.
4. Liberate NASA data and content through published API's and functional interfaces.
5. Develop applications that are capable of migrating to the cloud.

#### **Initiative Goals:**

1. *Release an RFP for NASA's information technology services (July 2012)*
2. *Begin a pilot activity to demonstrate the capability of an Open Source Software Content Management System (September 2012)*
3. *Consolidate multiple blogging infrastructures to an Open Source Software Content Management System (December 2012)*
4. *Transition NASA.gov's current proprietary content management system to a new open platform. (February 2013)*
5. *Develop an API for NASA.gov public content (April 2013)*
6. *Migrate other NASA websites into new web infrastructure (April 2014)*



# MAJOR INITIATIVES

**OPEN DATA**



The open data movement at NASA is multifaceted, including further release of data sets, publishing data sets to data.gov, and developing strategies to process large data sets. NASA will continue to develop its single portal for NASA data (data.nasa.gov) and leverage data.gov to enable users to locate relevant high quality data and easy to use tools and applications. The Agency will also continue to encourage users to utilize raw datasets to perform analysis, experiments, and learning as well as to leverage the efforts of external developer communities who create applications relevant to NASA's mission.

## **data.nasa.gov**

NASA's commitment to open data expands the audience for the vast body of knowledge captured in nearly 100 years of U.S. aeronautics and space data. Developers, technologists, entrepreneurs, citizen scientists and many others can contribute directly to the exploration of space and Earth by helping to create new ways of looking at this data. Additionally, the release of administrative and procedural information from within NASA enables researchers and analysts to understand more about the inner-workings of NASA as well as allow our own employees to better understand other functions of our Agency.

As part of the Open Government Initiative, the Agency is working to improve accessibility to this data and incentivizing the use of government data by citizens. To address the ever-increasing amount of tools and data catalogs that are publicly available on NASA's many websites, this directory lists publicly available datasets and serves to streamline the process for posting these datasets on data.gov. The directory includes information and direct links to more the 1000 datasets, and this is just a small beginning.

### **Initiative goal:**

*Continue to build the internal directory with an additional 500 datasets, including every NASA center and representing as much of NASA's internal work as possible, with an increased percentage of data graduated up to data.gov. (2 years)*

## **NASA's data.gov Working Group**

Data.gov was created in 2009 as a step toward implementing a more open and accountable government. Each Agency participates by providing support and recommendations to the architecture of the site as well as populating data.gov with its data. For NASA, as a mission-driven Agency, data is at the heart of what we do, and the Working Group functions as a liaison between data.gov and NASA's data curators as well as participating in the evolution of the platform. The Working Group embraces the opportunity to reach out to new stakeholders via data.gov, including application developers, social scientists, researchers, citizen scientists, and data enthusiasts. We believe that the data.gov platform will facilitate even greater usage of our existing Web services which will provide incentive for us to find additional information to make available for download.

### **Initiative goal:**

*Release an additional ten new high-value datasets or information holdings to data.gov that have never been released to the public before. Upon release of each dataset or information holding, we will issue a rationale for why it is high-value. (1 year)*

## Big Data at NASA

Exploring innovative approaches to extremely large datasets is of vital interest to NASA. In line with its extensive amounts of science data, and commitment to making large datasets accessible to the public, the Agency continues to encourage users (internally and externally) to utilize raw datasets in new ways to perform analysis, experiments, and learning. NASA also partners widely across government agencies to support sharing of best practices and cross-agency planning.

The variety of NASA's current Big Data activities and approaches include:

- Science Mission Directorate (SMD) is committed to Big Data research and development that is focused on specific NASA science needs and missions. SMD is currently soliciting for new awards in 8 Big Data areas in its Research Opportunities in Space and Earth Sciences (ROSES) – 2012 and partners with DOE, NOAA, USGS, USAF, EPA, NIST, DOD, and NSF on a variety of Big Data activities.
- NASA's Human Exploration and Operations Mission Directorate (HEOMD) has a number of innovative approaches to advancing Big Data, including the Lunar Mapping and Modeling Activity and the NASA Center of Excellence for Collaborative Innovation.
- NASA's Aeronautic Research Mission Directorate (ARMD) open data activities includes the DASHlink virtual laboratory, a tool for scientists and engineers to disseminate information on the latest data mining and systems health algorithms, data, and research, and collaborate on research problems for aeronautics systems. DASHlink connects researchers working in similar areas by making public data sets, open-sourced algorithms, and non-proprietary research results more accessible. Participants can upload technical projects to disseminate, collaborate, and innovate more easily both within NASA and beyond.
- NASA's Technology Program includes large-scale data management and analysis in its NASA Technology Area 11 (Modeling, Simulation, and Information Technology & Processing) and specifically identifies Intelligent Data Understanding as a technology need area. Though no solicitations are planned for 2012 in this area, the Office of Chief Technologist does have annual solicitations in its Game Changing Technologies, NASA Innovative Advanced Concepts (NIAC) and SBIR/STTR programs, where proposals addressing Big Data would be welcome.

### Initiative goal:

*NASA will create opportunities for enhanced coordination across NASA's Big Data activities, and expanded cooperation with other agencies. (1 year)*



**OPEN SOURCE**

Open Source can bring numerous benefits to NASA software efforts, including increased software quality, reduced development costs, faster development cycles, and reduced barriers to public-private collaboration through new opportunities to commercialize NASA technology. This inherently transparent, participatory, and collaborative approach is revolutionizing the way software is created, improved, and used. Although open source release has already provided numerous benefits to NASA, the full benefits of open source can only be realized if NASA is able to establish the processes, policies, and culture needed to encourage and support open source development. This will require expanding open source activities beyond releasing software only after completion and finding new ways to support two-way collaboration with an open development community throughout the entire software lifecycle.

NASA open source initiatives give the public direct and ongoing access to NASA technology. NASA's adoption of open source helps lower the barrier to entry into space by enabling private industry to better make use of NASA investments. NASA will continue to make new software available through the portal for NASA open source software, [code.nasa.gov](http://code.nasa.gov). It will also work to establish the processes, policies, and corporate culture to favor open source development.

NASA has already made strides in advancing open source development at the agency. Open Source was a Flagship Initiative in version 1.0 of the NASA Open Government Plan. In the past year NASA pushed forward open source development by:

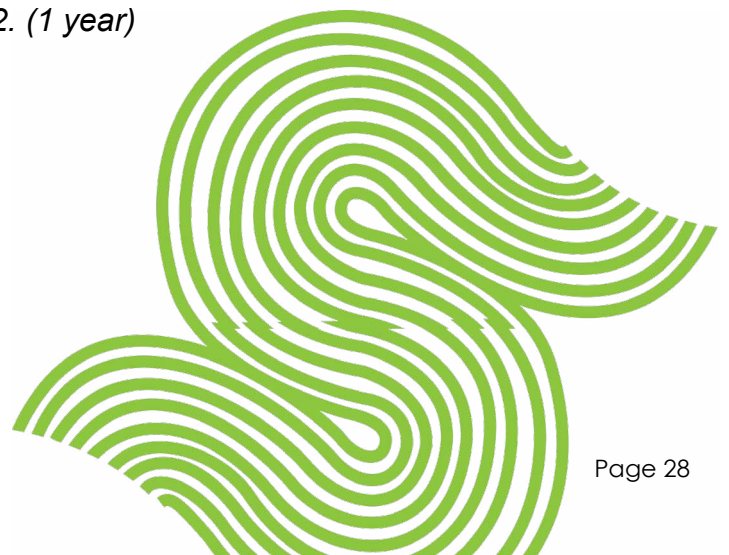
- 1) Establishing agreements that allow NASA open source to be hosted on SourceForge and GitHub, two of the most popular public hosting sites.
- 2) Releasing software under multiple open source licenses including the NASA Open Source Agreement (NOSA) and the Apache 2 license.
- 3) Starting the process to develop a Contributor License Agreements (CLA), which will enable third party contributions to be made to NASA open source projects.
- 4) Experimenting with crowd-sourced open source development.

## Open Source Summit

NASA hosted its first Open Source Summit in March 2011 at Ames Research Center, setting the stage for the future of Open Source at NASA. The highly successful event together over 700 registered participants, 545 of them who participated online. The summit was an attempt at something new and revolutionary – reaching out to the public and actively involving them in an evolving conversation related to NASA's mission.

### Initiative goal:

*Hold a second Open Source Summit in summer 2012. (1 year)*



## **code.nasa.gov**

NASA launched an early alpha of code.nasa.gov in January 2012 as the latest member of the open NASA web family. The website will continue to unify and expand NASA's open source activities, highlights current activities, provide a forum for discussing efforts and processes, and guide internal and external groups in open development, release, and contribution.

In our initial release, code.nasa.gov is focused on providing a home for the current state of open source at the Agency, including guidance on how to engage the open source process, points of contact, and a directory of existing activities. By elucidating the process, NASA hopes to lower the barriers to building open technology in partnership with the public. Phase two will concentrate on providing a robust forum for ongoing discussion of open source concepts, policies, and activities at the Agency. The third phase will focus on software tools to improve and speed open source development, including distributed version control, issue tracking, continuous integration, documentation, communication, and planning/management. During this phase, NASA will create and host a tool, service, and process chain to further lower the burden to going open. The ultimate goals include creating an awareness of open source development efforts at the Agency, creating a highly visible community hub that will infuse open concepts into the formulation stages of new hardware and software efforts, and help existing activities transition to open modes of development and operation - a "default open" agency.

### **Initiative goal:**

*To increase the number of organizations present on code.nasa.gov and deploying discussion forums. (1 year)*

## **Collaborative code repository**

To continue, encourage, and highlight open source NASA activities, NASA has created an initial public repository on a web-based social code host and revision control application. Our first public repository houses NASA's popular World Wind Java activity, an open source 3D interactive world viewer. In addition, we are actively reaching out to other open source software activities within NASA and encouraging them to make use of this and similar resources. We hope that highly visible and coordinated hosting of activities will stimulate development and awareness and make the platform the default repository for new open source software releases.

In parallel, the Agency has setup a pilot activity to test an Agency-wide private enterprise collaborative repository. The tool interfaces with its hosted repositories to provide developers and activity managers with tools for Team Management and Collaboration, Activity Wikis, Integrated Issue Tracking, Milestone Definitions, Advanced Searching, Code Review, and Branch Analysis. The tool also extends Social Interaction for the Developers through Activity Streams, Developer Profiles and Following, Code Exploration, Network Graphs, and a Fork Queue to merge changes on the web. This tool will promote developer collaboration, code reuse, knowledge capture, and transparency. Importantly, due to the nature of this source control system, users will be able to seamlessly move private efforts to public repositories if and when they clear the software release process, including all development history (if desired).

### **Initiative goal:**

*Implement a public and private collaborative code repository. (2 years)*

# TECHNOLOGY ACCELERATORS

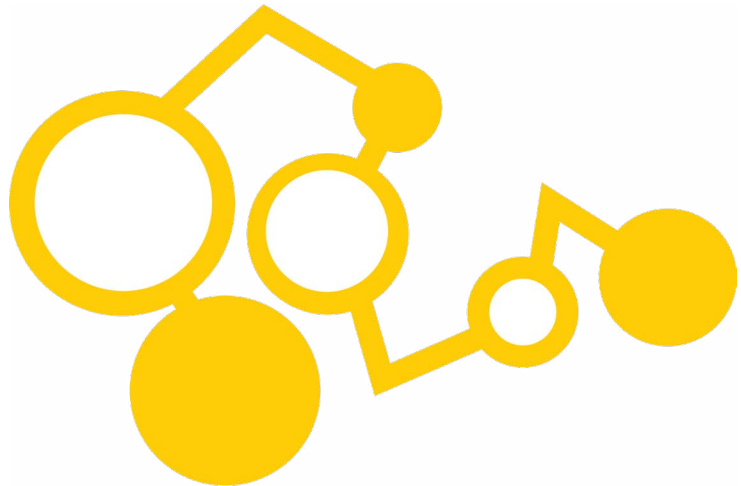
The broad spectrum of NASA's commitment to technology acceleration includes public-private partnerships, co-located spaces, citizen engagement and innovation mentoring - all in addition to making enormous amounts of open scientific data available for public use. The International Space Apps Challenge and Random Hacks of Kindness emphasize quick, collaborative development, while LAUNCH has developed a closely connected community of innovators that develops specific technology needs over a longer term. Both types of events offer significant opportunities for hardware and software development, diverse participation, and validation of the immense value of spaceflight data to create solutions focused on improving life on Earth.

## International Space Apps Challenge

The International Space Apps Challenge is a technology development event during which citizens from around the world will work together to solve current challenges relevant to both space exploration and social need. NASA is leading the global Challenge as a United States domestic commitment to the Open Government Partnership (OGP) – a new, multilateral initiative that aims to secure concrete commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance.

Participation in the Space Apps Challenge creates unique opportunities for NASA and the other global event partners:

- A visible demonstration of a government's interest in using space data and technology, in partnership with others, to address global needs.
- An opportunity for citizens in countries with little or no investments in space technology to contribute to space exploration through open source, open data, and code development.
- A demonstration of commitment to the principles of the Open Government Partnership.
- Promote Science, Technology, Engineering and Mathematics (STEM) education by encouraging students from around the world to utilize space technology for solutions to global challenges.
- Demonstrate the value of space technology for addressing global needs of life on Earth.
- Encourage international partnership and mutual understanding.



The Space Apps Challenge offers the opportunity for focused software and hardware development via a truly international collaboration while emphasizing the vast potential of NASA's open data for life on Earth and life in space.

### Initiative goal:

*To hold the International Space Apps Challenge in April 2012 in at least 10 global locations. (1 year)*

## LAUNCH

LAUNCH is a social entrepreneurship enterprise that breaks new ground with public/private partnerships to bring about innovative solutions to intractable sustainability challenges around the world. The concept of LAUNCH is based on a foundation of collaboration across non-traditional disciplines and organizations. NASA partnered with U.S. Agency for International Development, the State Department and NIKE to form LAUNCH in an effort to identify, showcase and support innovative approaches to global sustainability challenges. LAUNCH searches for visionaries whose world-class ideas, technologies or activities show great promise for making tangible impacts on society in the developed and developing worlds.

LAUNCH creates three unique opportunities for NASA:

- Sharing the sustainability story of how living in space mirrors Earth — we have no natural resources in space which forces us to generate, collect, store, conserve, recycle, and manage our resources wisely — just like Earth but more extreme;
- Offering our problem-solving expertise and convening power of the NASA brand to host crucial conversations on sustainability-related topics with innovative problem solvers from around the world, and
- Promoting the emergence of transformative technology to solve problems that we share as global citizens of this planet, which may also address issues of long-duration life in the extremes of space.

The LAUNCH Accelerator phase follows each forum and provides critical support for each innovator's LAUNCH journey. The LAUNCH team walks the Innovators through recommendations and insights shared by the Council, refines and crafts a forward strategy, and helps make connections necessary to solidify future support for each innovation.

### **Initiative goal:**

*To directly support at least one LAUNCH event each year. (1 year and 2 years)*



## Random Hacks of Kindness

Random Hacks of Kindness (RHoK) is a community of innovation developing practical open source solutions for social good. Developed in partnership between NASA, World Bank, Google, Microsoft, Yahoo!, and HP, RHoK's unique model builds the capacity of subject matter experts and local stakeholders to identify problems where technology can help, volunteer technologists to understand these problems and create solutions, and event organizers to run events that bring these groups together for synergistic collaboration. NASA participates by encouraging the utilization of NASA's immensely valuable open databases, which can serve as the content to many potential world-changing apps.

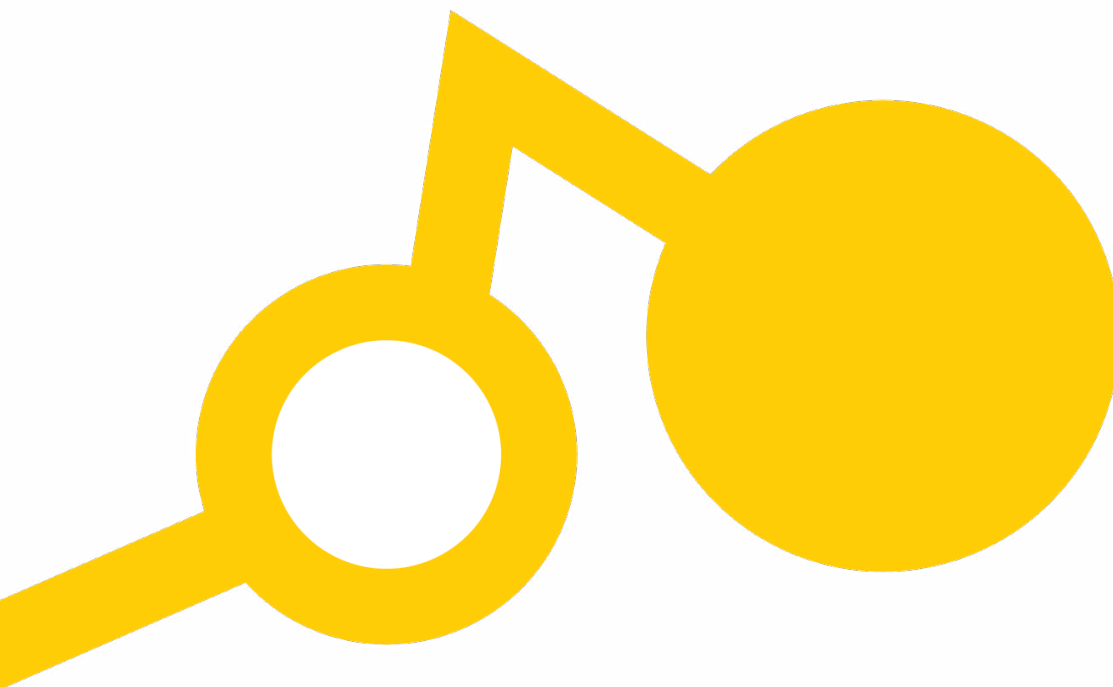
Random Hacks of Kindness creates many unique opportunities for NASA and global event partners:

- Offering NASA's open data as a resource for solving global challenges
- Offering innovators opportunities to participate in NASA's space exploration mission
- Offering NASA opportunities to work with citizens and learn from the experience and entrepreneurial spirit of those outside the government, helping to facilitate even more open policy, technology, and culture.

RHoK is an activity of the Open Government Initiative within the Office of the Chief Information Officer. The Open Government team is part of the core strategy team for RHoK and attends some of the physical mainstage RHoK events and also participates in the online RHoK community year-round. Membership in the global RHoK community now includes more than 4000 people in more than 45 cities, with 180+ partners having worked on more than 100 events.

### Initiative goal:

*To directly support two Random Hacks of Kindness events each year. (1 year and 2 years)*



# HIGHLIGHTED ACTIVITIES

## **PRIZES AND CHALLENGES**

As an early adopter of challenge approaches, NASA continues to offer diverse opportunities for citizen participation in meeting technology needs – promoting public involvement and awareness of the United States space program while creating an environment where one person can make a substantial difference. These models are inherently participatory, as large and diverse communities of solvers around the world may pose a potential solution to a challenge. Depending on the type of need, solvers may collaborate on a solution or establish a partnership with NASA to develop the proposed deliverable. This process facilitates cross-discipline synergies, and provides NASA with the opportunity to supplement its internal expertise with a broad community of experts it otherwise would not be able to access.

NASA will continue its Centennial Challenges Program with the recent announcement of new challenges. In addition, NASA has established a new position, the Prizes & Design Challenges Executive, to coordinate, monitor and evaluate the agency's prizes and design challenges. The official in this new position reports to the Office of Chief Technologist (OCT), and provides Agency-wide strategic leadership and representation within government-wide "community of practice" working groups as identified in the Executive Office of the President's memorandum providing "Guidance on the Use of Challenges and Prizes to Promote Open Government."

## **Centennial Challenges**

In September 2011, NASA awarded the largest prize in aviation history with the Green Flight Centennial Challenge (\$1.35m for first place). Created to inspire the development of more fuel-efficient aircraft and spark the start of a new electric airplane industry, the first and second place teams achieved twice the fuel efficiency required in the competition, flying 200 miles using just over a half-gallon of fuel equivalent per passenger. For 2012 and beyond, OCT announced the following challenges as a part of their Centennial Challenges Program: Nano Satellite Challenge, Night Rover Challenge, and Sample Return Robot.

### **Activity goal:**

*Launch of 2 new challenges. (1 year)*



## **NASA Tournament Lab**

NASA has partnered with Harvard Business School and TopCoder to create the NASA Tournament Lab (NTL), which will enable a community of coders to compete amongst each other to create the most innovative, most efficient, and most optimized solutions for specific, real-world challenges being faced by NASA researchers.

The NTL provides an online virtual facility for NASA researchers with a computational or complex data processing challenge to post ideas for potential algorithmic or software development challenges. These ideas can then be discussed, refined, and voted upon by peers. Chosen problems will be converted into problem statements and run as competitions within the NTL community. Software developers, algorithmists, and mathematicians will compete with each other to create a winning solution, as measured by internal code quality, performance against benchmarks, and the ability to be integrated into NASA systems.

### **Activity goal:**

*Completion of twenty challenge tournaments. (2 years)*

## **Open Innovation Service Providers**

### *NASA Innovation Pavilion*

NASA has partnered with InnoCentive to provide the public with the opportunity to solve difficult challenges facing the U.S. space program through the use of crowdsourcing methodologies. Solutions to the challenges on the NASA Innovation Pavilion will not only benefit space exploration, but may also further the development of commercial products and services in other industries. Posted challenges attract thousands of potential solvers from many different countries. The open innovation challenges aid NASA's efforts to become a more transparent Agency while also diversifying the number of potential external collaborators for NASA. This model is inherently participatory, as large and diverse communities of solvers around the world may pose a potential solution to a NASA challenge.

### **Activity goal:**

*Completion of 3 challenges. (1 year)*

### *Technology Scout/Consortium*

Unlike the crowdsourcing methodology, the technology scout approach employs a strategy that is focused on specific technological needs that require partnerships or consortiums of experts to help develop solutions or technologies instead of a developed solution. Similar to the crowdsourcing approach, the technology scout identifies potential partnerships from across the globe extending NASA's technological reach and access to previously untapped solution spaces.

### **Activity goal:**

*Completion of 3 technology needs. (1 year)*

## NASA@Work

Based on the success of the external open innovation service provider programs, an internal crowdsourcing program entitled NASA@work was initiated. NASA@work is a web-based platform supported and developed by InnoCentive. Unlike external crowdsourcing, the objective of an internal crowdsourcing based platform, such as NASA@work, is to leverage the breadth and depth of the expertise already present within the organization. NASA includes an extensive number of experts that are not only discipline diverse but are also geographically dispersed. This presents a challenge for NASA, specifically with being able to fully utilize its workforce and its resources across 10 centers agency-wide. The objective of the NASA@work is to connect the collective knowledge of individuals from all areas within the NASA organization via a private web based environment. The platform provides a venue for NASA Challenge Owners, those looking for solutions or new ideas, to pose challenges to internal solvers, those within NASA with the skill and desire to create solutions.

### Activity goal:

*Completion of 12 internal challenges. (1 year)*



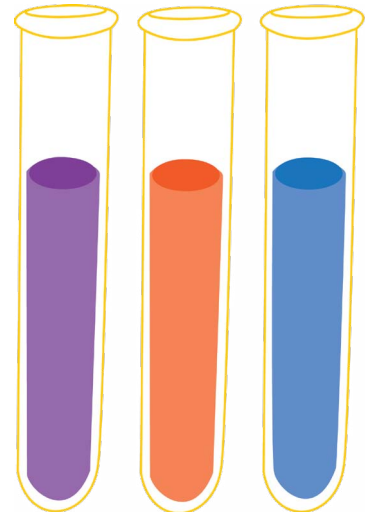
## **CITIZEN SCIENCE**

The Science Mission Directorate's citizen engagement focus will utilize online platforms such as social media, live-streaming, and blogging to enable citizen participation in a variety of initiatives, including Earth Science Airborne campaigns, the Venus Transit, SOFIA Airborne Ambassadors and Kepler's search for earth-like planets. Citizen scientists have helped answer serious scientific questions, provided vital data to the astronomical community, and discovered thousands of objects including nebulae, supernovas, and gamma ray bursts. These efforts will engage the public at the intersection of science and technology to encourage better solutions, broader scientific applications of NASA data, and enhanced STEM educational opportunities.

Current activities include:

## **GLOBE at Night**

Calling all Earthlings! Take a few minutes to get involved in the GLOBE at Night campaign to preserve dark skies! GLOBE at Night is a citizen-science campaign open to people all over the world to raise awareness of the impact of light pollution by inviting citizen-scientists to measure their night sky brightness and report their observations to a website from a computer or smart phone. Light pollution threatens not only our "right to starlight", but can affect energy consumption, wildlife and health. Through 2011, people in 115 countries contributed 66,000 measurements, making GLOBE at Night one of the most successful light pollution awareness campaigns to date. Please join us to participate in the 2012 campaign an hour after sunset till about 10pm April 11 through 20. For information and resources, visit us at [www.globeatnight.org](http://www.globeatnight.org).



## **HiWISH**

You can help decide where the Mars Reconnaissance Orbiter will point its camera, HiRISE, next! Suggest a new target or browse the targets already in our database, including those for past HiRISE images. Where should HiRISE take a picture?

## **Lunar Impact Observations**

NASA needs your help to monitor the rates and sizes of large meteoroids striking the moon's dark side. This data will help engineers design lunar spacecraft, habitats, vehicles and extra-vehicular activity (EVA) suits to protect human explorers from the stresses of the lunar environment.

## **MY NASA DATA**

Mentoring and inquiry using NASAData for Atmospheric and earth science for Teachers and Amateurs (MY NASA DATA) is an activity to enable K-12 teachers and students, as well as citizen scientists, to explore the large volumes of data that NASA collects about the Earth from space. Students use scientific inquiry and math skills as they access and display microsets of the Earth System.

## **Night Sky Network**

Whether you're just getting started or observe the skies at every opportunity, you'll find helpful this list of links from NASA's Jet Propulsion Laboratory (JPL), <http://www.jpl.nasa.gov/>. The website includes



resources for amateurs, students and educators.

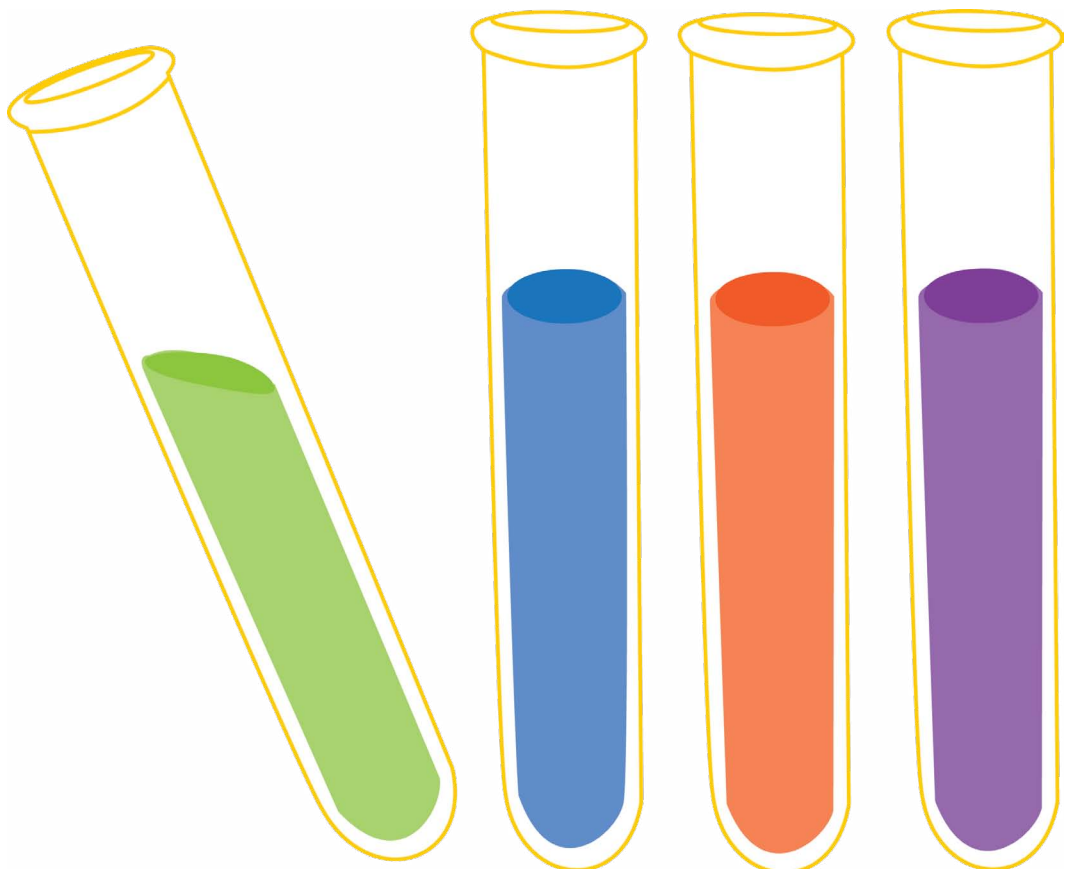
## Citizen Science Software Tools

JPL's Solar System Dynamics Group provides the following software tools for the sky observer:

- Ephemeris Generator for all bodies in the solar system including comets and asteroids.
- Small Body Orbital Elements provides the orbital elements for numbered asteroids, unnumbered asteroids and comets.
- Object Identification - Given a date, location and region of sky, find all comets and asteroids matching the constraints within the region.
- What's Observable Tonight? - Given an observation date, location and other constraints, find all asteroids and comets that are observable on that night.
- Finding Pre-discovery Observations With SkyMorph

### Activity goal:

*Increase the number of students and citizen scientists involved in Sun-Earth Day due to the synergy among the larger Transit of Venus community, including the amateur astronomers and the Goddard Space Flight Center. (1 year)*



## EDUCATION INFRASTRUCTURE DIVISION



The Office of Education will create a new Infrastructure Division to implement the principles of transparency, participation, and collaboration throughout all of its education activities. The division will work to improve education policy and decision-making, provide better education services, increase accountability and ensure more effective administration.

The Office of Education Infrastructure Division (OEID) will deliver subject matter expert (SME) services for NASA Education through a systematic approach and with a unified information and technology system. These services are interconnected structural elements that provide Education Framework support. This support facilitates, enables, sustains, and enhances informed NASA Education management and policy decision-making.

The OEID is composed of Office of Education civil servants, contractors, and grantees:

- **Operations and Information Exchange Team:** The Operations and Information Exchange Team serves as the first point of entry to request OEID support services. The team also provides the following direct communications, event management, and resource facilitation services to internal and external NASA education audiences.
- **Information Technology Systems Team:** The Information Technology (IT) Systems Team of NASA Education's Infrastructure Division brings a diverse set of skills and expertise to manage the Office of Education agency level IT systems'. System life cycle activities include system development, implementation, and operations and sustainment activities.
- **STEM Workforce Support and Learners, Educators, and Institutions Team:** The STEM Workforce Support Team facilitates implementation, collaboration, and coordination across NASA's Education Portfolio.
- **Evaluation Team:** The Evaluation Team of NASA Education's Infrastructure Division brings a diverse set of skills to support all stages of education programs, from program design through implementation and assessment of outcomes.

#### **Activity goal:**

*The Office of Education Infrastructure Division (OEID) will complete the design and implementation of an organizational structure that employs a systematic approach to managing Information, Technology, and Communications within the Office of Education. (1 year)*

# **FREEDOM OF INFORMATION ACT**

NASA continues to improve the Agency's FOIA program to improve the efficiency with which it provides the public access to Agency documents.

Enacted in 1966, The Freedom of Information Act (FOIA) (5 U.S.C. §552) provides an effective statutory right of access to Federal government documents. Since that time, Congress has regularly updated the original statute through legislative amendments. In 2007, Congress passed the OPEN Government Act, addressing several procedural issues that concern FOIA administration. NASA's FOIA program is in the forefront of providing the public access to Agency documents. Each of NASA's 13 Centers maintains a FOIA Web site with contact information, information on how to submit a FOIA request, and a host of other information that may be of interest to the public.

The NASA FOIA program is placed in the Communications/Public Affairs Offices. NASA's decentralized FOIA program consists of a Principal Agency FOIA Officer who provides operational oversight of the program on behalf of the Chief FOIA Officer and one main FOIA office located at each of the 13 FOIA Centers, including Headquarters and the OIG. Each FOIA office receives and processes FOIA requests. In 2011, all FOIA staff began using a single FOIA tracking system for cradle to grave processing of requests; ultimately eliminating redundancy and duplication of effort. Although the FOIA offices are decentralized, the FOIA staff work together and when appropriate, one office will take the lead in responding to a requester who has submitted identical requests to more than one office. This business process has streamlined the program, providing a collaborative and consistent approach when responding to requests. This process has also enabled NASA FOIA staff to efficiently reduce the FOIA processing time without compromising the integrity of the program. As an example, in 2009, NASA received 1,226 FOIA requests, processed 601, and received 22 appeals. In 2010, NASA received 1058 requests, processed 1306 and received 33 appeals. In 2011, NASA received 1027 requests, processed 1131 request and received 21 appeals. Significantly, the Agency FOIA backlog has constantly decreased over the last three years. In 2009, the FOIA backlog was 431; in 2010 the FOIA backlog was 117; in 2011 the Agency FOIA backlog was 34.



When a NASA FOIA Office receives three requests for the same document(s), the responsive documents are typically placed in the FOIA Library at the Center where the request was processed. In addition, all NASA Centers proactively update and post documents of public interest to their websites on a regular basis, alleviating the need for requesters to submit FOIA requests for the information. NASA continues to receive accolades for the proactive efforts in providing information and communication with the public.

The FOIA has and continues to be a key administrative avenue for the public to obtain Agency documents. NASA's pro-active disclosure and media-centric approach has allowed the public greater access to information while reducing the need to submit FOIA requests. At the same time, NASA has met and exceeded the goal to reduce the Agency FOIA backlog. NASA FOIA staff strives to achieve a top-rated citizen-centric program.

#### **Activity goal:**

*NASA's FOIA office will continue to maintain a top-rated citizen-centric program and will continue to reduce the Agency backlog. (1 year)*

**ZERO ROBOTICS**

ZeroRobotics is a national competition to program the robotic Synchronized Position Hold, Engage, Reorient, Experimental Satellites (SPHERES) satellites inside the International Space Station (ISS). Finalists will participate in a championship competition where an astronaut will conduct the game in microgravity with a live broadcast from the ISS. This activity creates opportunities for students and crewmembers to interact in an environment that will foster collaboration, technology development, and excitement about STEM education.

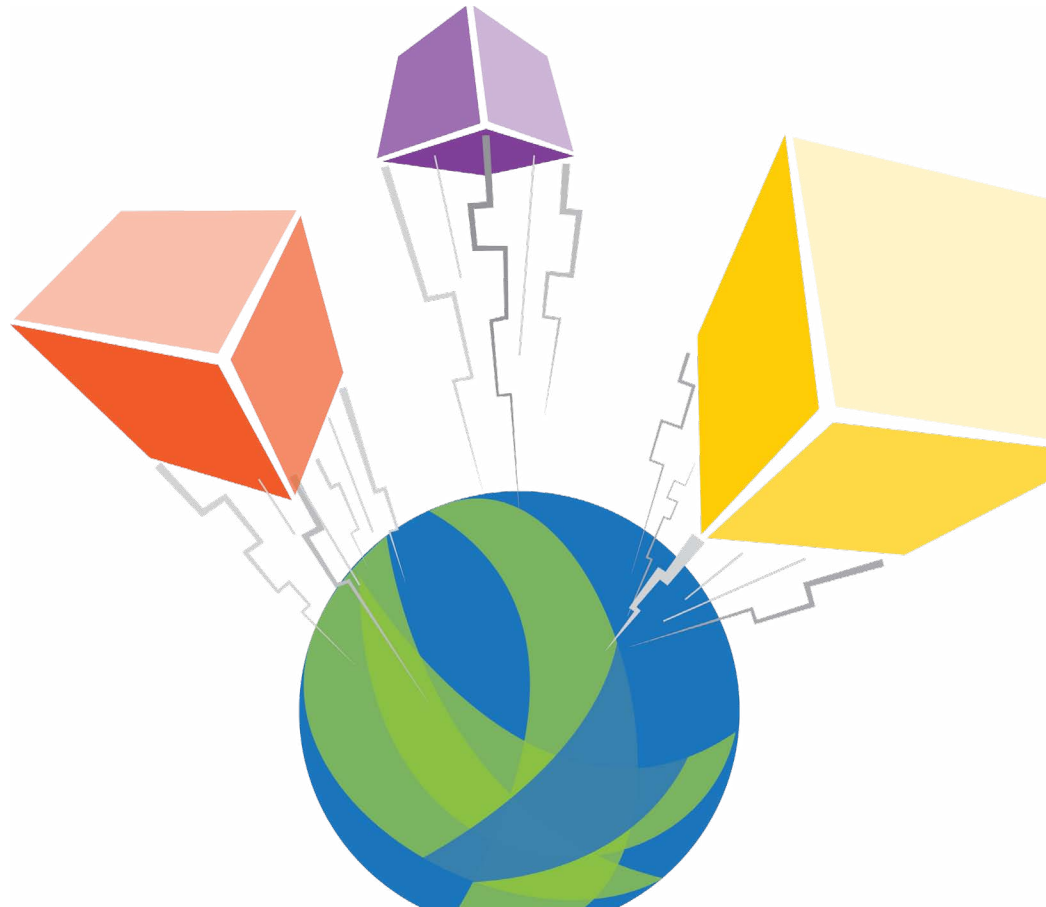
SPHERES-Zero-Robotics provides dozens of high school students access to the microgravity environment for experimentation and analysis. Through the program, students design software to accomplish complex tasks in space; such as docking, assembly, and formation flight for the SPHERES system, which is currently on board the International Space Station (ISS).

Each season begins with the unveiling of a game motivated by a challenging problem of interest to NASA and Massachusetts Institute of Technology (MIT). During the competition, each team must complete a set of pre-determined tasks. During all phases, the students are challenged not only with programming, but also with the development of documentation and presentations to add to their engineering and communication skills.

SPHERES-ZeroRobotics students are truly engaged in space research. Starting at the high school age group, students view working in space as normal, with the expectation that they become inspired to push the limits of space exploration, engineering, and development. Additionally, the program provides a unique and valuable opportunity to maintain students interested in STEM (Science, Technology, Engineering and Mathematics) careers; even those who do not wish to pursue space careers see their lives affected by knowing their work can have an impact beyond the classroom. The ability of the students to participate in real engineering activities, beginning in high school, potentially encourages them to remain interested in those fields. SPHERES-ZeroRobotics also builds a critical base for engineering skills in students, such as problem solving, design thought process, operations training, teamwork, and presentation skills.

**Activity goal:**

*Engagement of at least 1000 high school students in each of two seasons of competition over next 2 years. (2 years)*



**IT LABS**



NASA is an Agency of pioneers setting the agenda for the future of global technology. When NASA is taking on new grand challenges, it is imperative to stay engaged not just in Aerospace and Engineering technologies, but the enabling Information Technologies that can so elegantly support NASA's missions.

The Chief Information Officer's portfolio includes a wide range of infrastructure support services. With the accelerating dynamics of technological advances, NASA's status as a global technology leader depends on the ability to efficiently evaluate, adopt, and adapt emerging information technologies. IT Labs is an innovation incubator, soliciting ideas from the greater NASA community and enabling them to be researched as part of a rapid, low-cost, low-risk process. IT Labs shares the results with all of NASA and supports the adoption of technologies or processes that can benefit larger user populations.

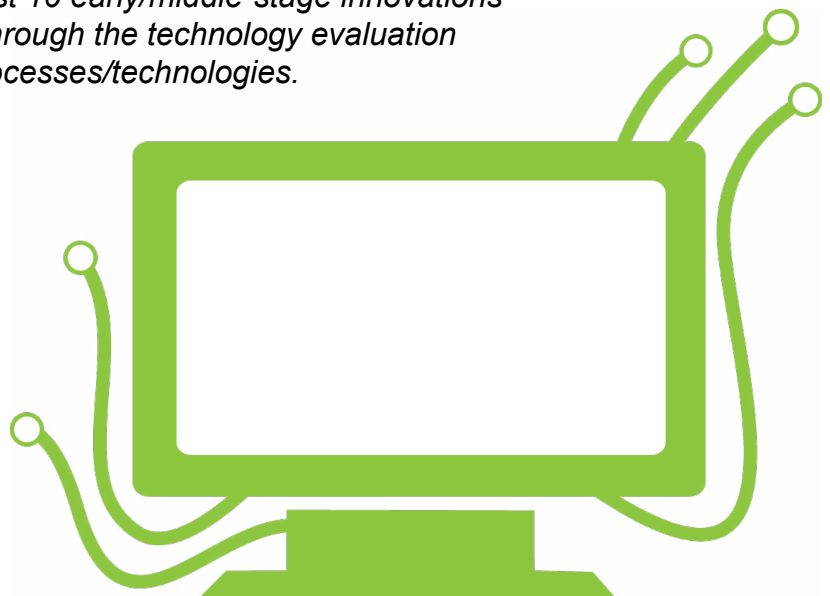
Activities are limited to a small scale and relatively short evaluation period (generally 90 days to one year). In addition, IT Labs works to build partnerships with internal groups—Mission Directorates, Centers and facilities—to pool resources in the pursuit of meaningful, cutting-edge technology solutions that can better meet NASA's needs.

IT Labs represents a significant leap from how NASA traditionally evaluates new technologies. Often, innovative efforts are either burdened by multiple layers of documentation, evaluation, and approvals; or conducted separately, often in multiple NASA centers to fulfill similar and business needs. IT Labs provides a central collection point for innovative ideas, as well as a lightweight, low-cost methodology for research, proofs-of-concept and prototyping as appropriate given the mission requirements. Soon, the IT Labs Web site will enable the NASA community to benefit from research results and lessons learned, as well.

IT Labs strives to keep the amount of paperwork and oversight to the necessary minimum, removing institutional inhibitors to innovation and enabling the speedy evaluation of technologies that can help government agencies meet both their enterprise requirements and their strategic goals. The process is entirely transferable, but will likely require internal stakeholders to collaborate and cooperate across traditional boundaries.

**Activity goal:**

*By FY14, IT Labs activity will support at least 10 early/middle-stage innovations with the goal of moving these innovations through the technology evaluation lifecycle, then piloting at least 2 of these processes/technologies.  
(2 years)*



**PHONE SAT**

The PhoneSat skunkworks activity aims to remove cost as a barrier to entry for participating in space activities, with the goal of allowing anyone with space ambitions to launch their own satellite. The DIY satellite activity uses a commercial grade Android mobile phone and the open source Android platform, in conjunction with other commercial off the shelf (COTS) components.

## **Ethos**

The project has incorporated the Silicon Valley 'release early, release often' mentality. This applies at several levels. At a system level, the entire architecture is evolving with time to (a) add new functionality to the satellite with succeeding iterations and (b) incorporate the latest and greatest COTS hardware. Ideally the goal would be to have a launch of a new satellite every 3-6 months. At a micro level, the team plans and executes rapid technology evolution with weekly targets and problem solving.

## **PhoneSat 1.0**

PhoneSat 1.0 is a satellite with minimal basic functionality -- to stay alive in space for a short period and send back health and picture data -- which has been tested to and passed NASA environmental testing specifications, and yet whose parts cost amount to \$3500. The core systems on the satellite are the Nexus 1 phone sold by Google, external batteries, an external radio beacon and a watchdog circuit. The latter provides simple monitoring of the systems and reboots the phone if radio packets stop being sent. These are all housed in 1-U (10x10x10cm) cubesat shell. Three copies of the satellite are built and are manifested on and awaiting a Taurus II rocket set for a summer 2012 launch.



## **PhoneSat 2.0**

PhoneSat 2.0 aims to build on and supplement the capabilities of PhoneSat 1.0. The aim is to have a completely functional satellite bus. The key ingredients of which that are not in PhoneSat 1.0 are a two-way radio to be able to command the satellite from the ground, solar arrays to enable it to be a long duration mission and a system of attitude control. The milestone is to have completed, launched and gathered data from the PhoneSat 2.0 satellite. PhoneSat 2.0 is currently set to launch mid-year of 2013.

## **Beyond PhoneSat 2.0**

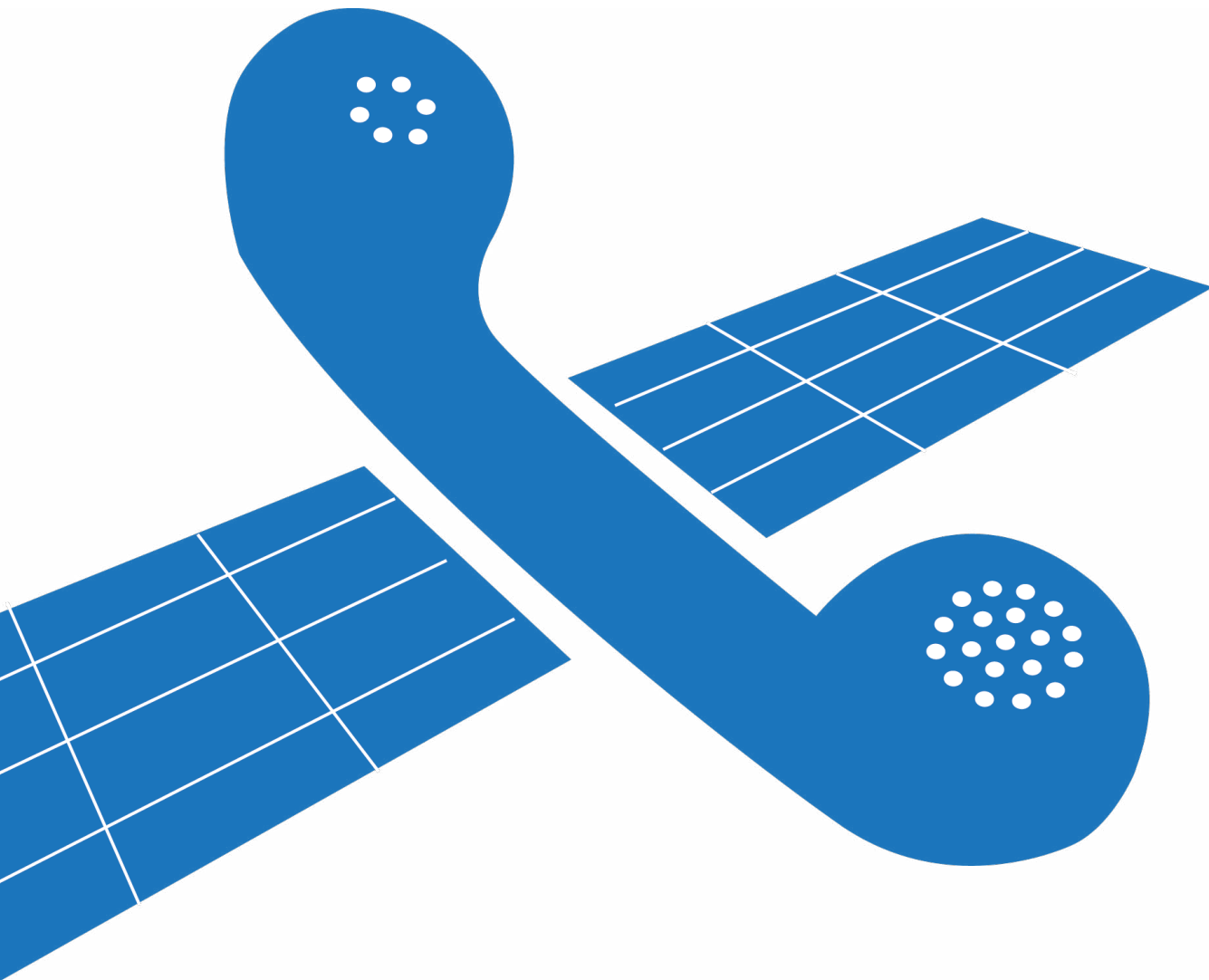
The current vision beyond PhoneSat 2.0 is two-fold: (1) to start using PhoneSat 2.0 bus to do science and exploration missions -- i.e. start utilising the benefits of PhoneSat and (2) to continue to push forward breakthrough technologies that enable (a) an increase in capabilities and (b) a decrease in cost. There are several directions that each could take: dispersed sensor heliophysics missions, missions to do space qualification of components, debris or NEO tracking, low cost Earth observation, Lunar and other exploration missions, add GPS, foldable design. These can all lead to significant new performance. The GPS could enable an array of missions not possible without. The foldable design

would entail compacting the PhoneSat bus into a smaller volume which folds out. This would enable multiple satellites to be launched per 1U size and since launch costs dominate, a lower overall mission cost. The PhoneSat 2 year milestone is to have iterated through several designs to produce a PhoneSat 3.0 which supports the vision beyond PhoneSat 2.0 with a primary focus on (a) dispersed sensors mission support and (b) a foldable design. The vision is to continue to \*decrease\* the cost AND \*increase\* the capability. Pursue both vectors simultaneously.

**Activity Goal:**

*The 1-year milestone is to have completed, launched and gathered data from the PhoneSat 2.0 satellite. PhoneSat 2.0 is set to launch in June of 2013. (1 year)*

*The 2-year milestone is to have iterated through several designs to produce a PhoneSat 3.0 which supports the vision beyond PhoneSat 2.0 with a primary focus on (a) dispersed sensor heliophysics mission and (b) a foldable design. (2 years)*



**CENTER OF EXCELLENCE  
FOR COLLABORATIVE INNOVATION**

With a growing focus on a national government with a commitment to openness, NASA has proactively investigated, tested and demonstrated the effectiveness of new business models, tools, and strategies that support collaborative innovation and NASA's mission. NASA's experimentation and early results come with great responsibility to lead empowerment of the rest of the federal government through shared experience and collective expertise regarding collaborative innovation. The Center of Excellence for Collaborative Innovation is envisioned as a Government-led virtual CoE to unify and advance the efforts of multiple U.S. Government Agencies seeking to use distributed innovation models to improve government processes. This initiative will result in the development of innovative solutions for NASA and other government agency challenges, using a unified framework and leveraging the resources of each for the benefit of all.

The goals of the CoECI include:

- The creation of a translational Community of Practice
- The creation of a collaborative environment for cross Agency experimentation in collaborative innovation
- Models for implementation guidance in collaborative innovation
- The creation of a repository of best practices and applications of collaborative innovation methodologies

The three primary functions of the CoECI include:

- Education and best practice sharing
- Implementation guidance
- Measurement of impact

Innovation is an inherently social activity; the best ideas emerge when the questions that need to be asked are effectively identified and can be asked to a broad and diverse audience. The Center allows NASA to share its experience and facilitate broader impact across other federal agencies.

### **Activity Goals:**

*To launch the CoE collaborative environment for cross-agency sharing of best practices, knowledge management, and collaborative project leadership. (1 year)*

*Conduct 2 training workshops within the next year. (1 year)*



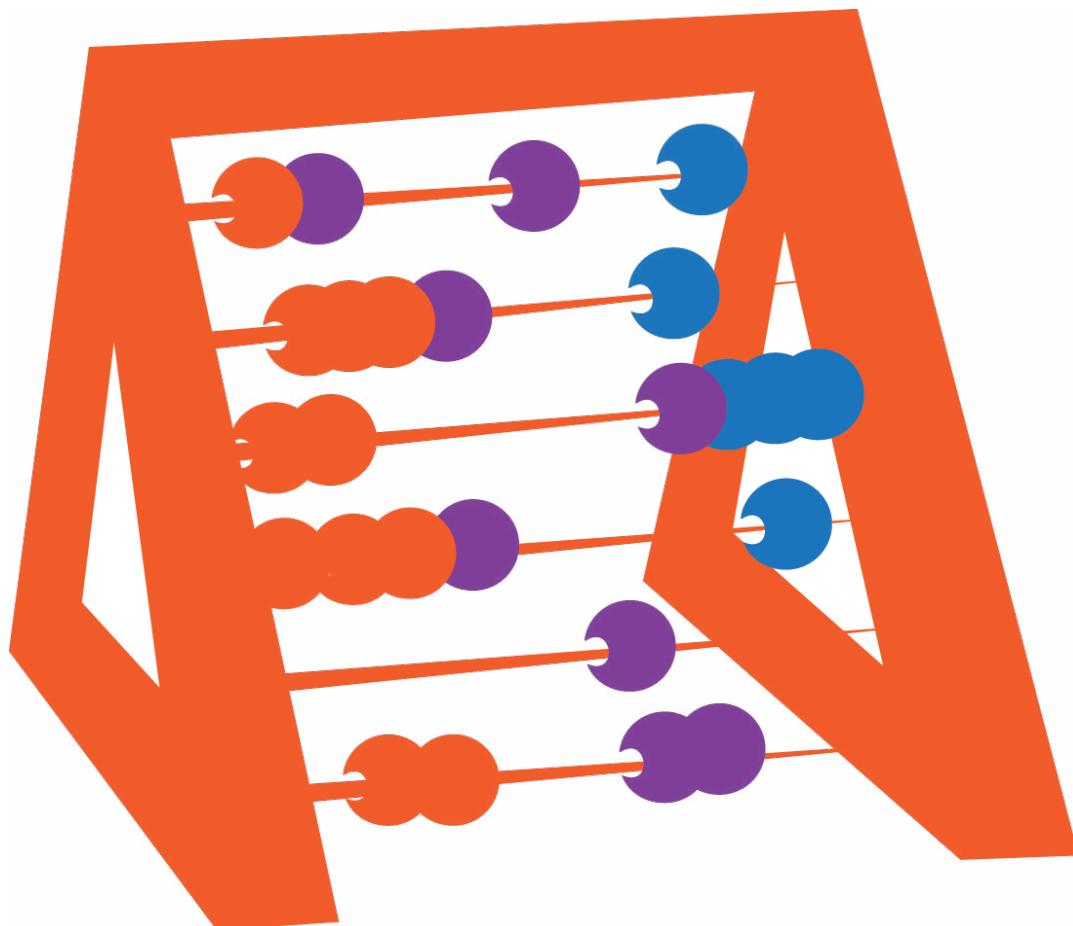
# **SCIENTIFIC AND TECHNICAL INFORMATION**

NASA's Scientific and Technical Information (STI) program manages one of the largest collections of facts, analyses, and conclusions in the world resulting from scientific, technical, and related engineering research and development efforts, both basic and applied. This program is essential to help NASA increase productivity and avoid duplication of research by sharing information and to ensure that the U.S. maintains its preeminence in aerospace-related industries and education. The NASA STI Program acquires, processes, archives, announces, and disseminates NASA STI and acquires worldwide STI of critical importance to NASA and the Nation. This includes published results, such as technical reports, journal articles, preprints, technical presentations, books, historical special publications, etc. and publishes this information online, in paper, multimedia and electronic form. STI resources include over a quarter-million full-text documents, and links to more than a half-million images and video clips. The main STI website is a resource for the public to locate, obtain, and publish NASA aerospace information and find national and international information pertinent to your research and mission.

Products of NASA's STI program, designed to make NASA's rich technical resources available internally and externally, include the NASA Aeronautics and Space Database, the NASA Technical Reports Server, RSS feeds, and an array of social media products that announce NASA's STI.

**Activity goal:**

*Over the next two years, NASA will modernize its systems and processes so that it can increase the amount of full-text searchable content on the public STI NASA Technical Reports Server as well as complete the digitization of the archived NASA and NACA (National Advisory Committee for Aeronautics) content. (2 years)*





## **COLLABORATIVE SPACES**

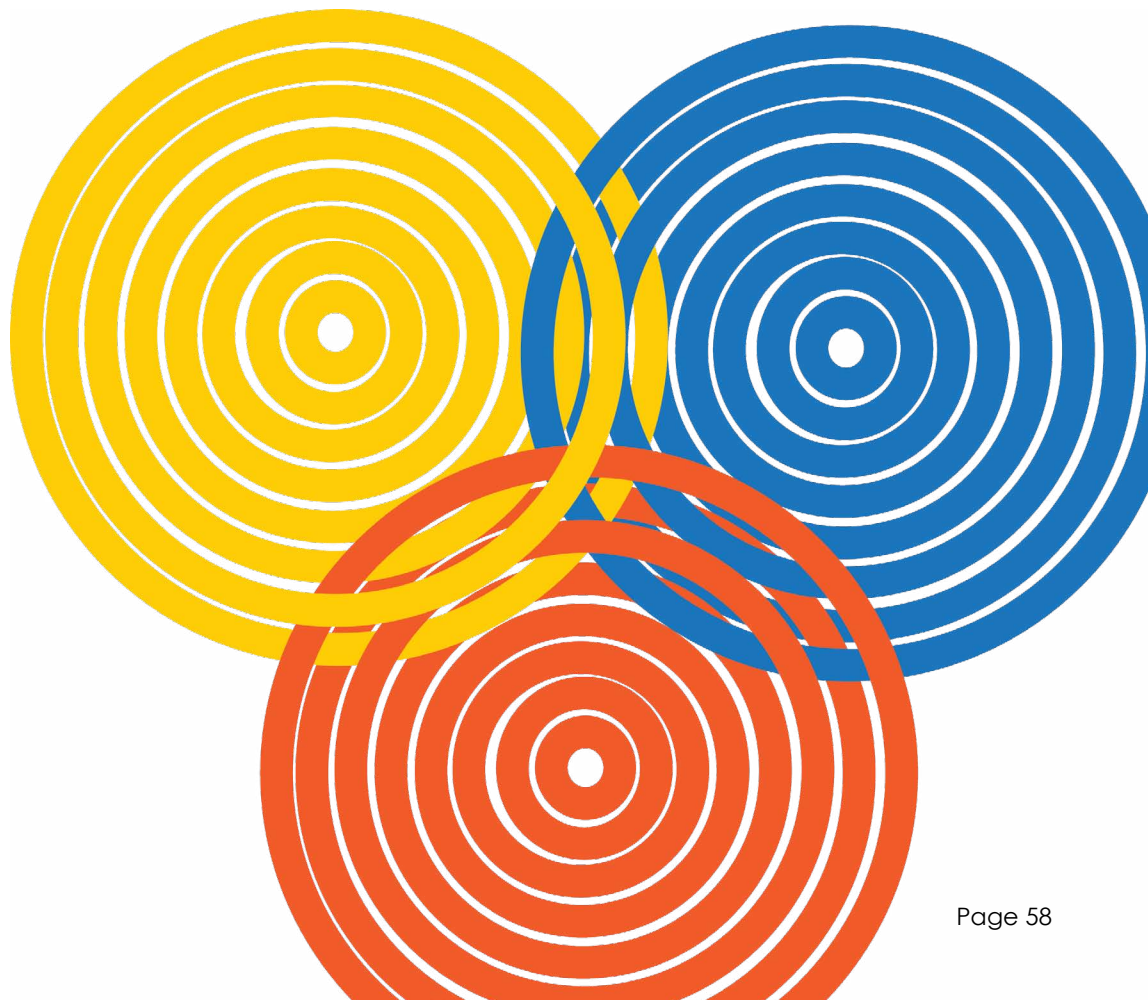
The Collaborative Space Activity supports the development of collaborative environments in physical spaces across the agency. This effort recognizes the need for communities at NASA to have physical interaction. Given the emphasis on travel budgets and electronic forms of communication, this effort also acknowledges the need for physical spaces which enable virtual interaction.

This activity focuses as much on the culture of how people collaborate as the technology used while doing it. The goal is to provide physical assets which enable communities to engage each other in the ways they prefer, while experimenting with new tools and techniques not normally provided by the traditional NASA workplace. Providing innovative spaces at and across centers offers alternative workspace for personnel, creative collaboration options for distributed teams, and actual equipment for modern techniques such as fast prototyping of hardware.

In addition to the facilitation of collaborative rooms and spaces at NASA, this effort looks to the culture of collaboration outside NASA as well. Advancements come from encouraging meet-ups, codeathon-style events, and community showcase events which naturally enable the exchange of techniques and use of a multi-protocol infrastructure. This allows other communities to shape collaboration trends within NASA, while giving citizens insight into the operations of their space program. Approaches could include a software approach to virtually connected physical collaborative workspaces, or a physical collaborative space which “straddles the fence” and allows access to on-site and off-site personnel equally.

**Activity goal:**

*Establish at least 10 collaborative spaces throughout the agency, with interconnectivity and data exchange enabled between agency spaces. (2 years)*





# DIRECTORY

Of Participatory, Collaborative and Transparent  
Activities that Exemplify Open Government  
at NASA

Participation

Collaboration

Transparency

NASA has established an open directory of activities to actively involve individuals as contributors to and collaborators with NASA's research, science, and exploration activities. The activities listed will encourage individuals to contribute their creativity and capabilities to NASA's mission of discovery and invites them to share in the excitement of building our future. This may include contributing to the creation of new missions, supporting engagement with existing missions and data, or to contributing innovative ideas and solutions to grand challenges. As more aeronautics research and space exploration missions are conducted with public participation and public-private collaborations, NASA envisions a greater return on science and technology investment, potentially freeing up more resources for additional research activities. Active engagement of the public may inspire today's scientists and engineers, as well as the next generation of explorers. It also reflects the increased relevancy of our activities to individuals.

One of our objectives in improving public participation is to encourage a broader segment of the population to become aware of and interested in the formal study and pursuit of a career in science, technology, engineering and math (STEM) as a method of promoting economic vitality. Additionally, giving individuals opportunities to participate in NASA missions gives them a first-hand look into the inner-workings of NASA.

At the time of publication, the directory is populated with over 100 participatory, collaborative and transparent activities. To view the directory visit:

<http://open.nasa.gov/plan/directory>

Version 2.0 of the NASA Open Government Plan would not have been possible without the extensive contributions of many individuals across NASA.

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